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12817A LANCE MISSILE NUMBER 4106, ROUND NUMBER 295 RCL.(U)
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April 1977

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METEOROLOGICAL DATA REPORT

12817A LANCE
MISSILE NO. 4106, ROUND NO. 295 RCL
(21 APRIL 1977)

BY

WSMR METEOROLOGICAL TEAM



ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO



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UNITED STATES ARMY ELECTRONICS COMMAND

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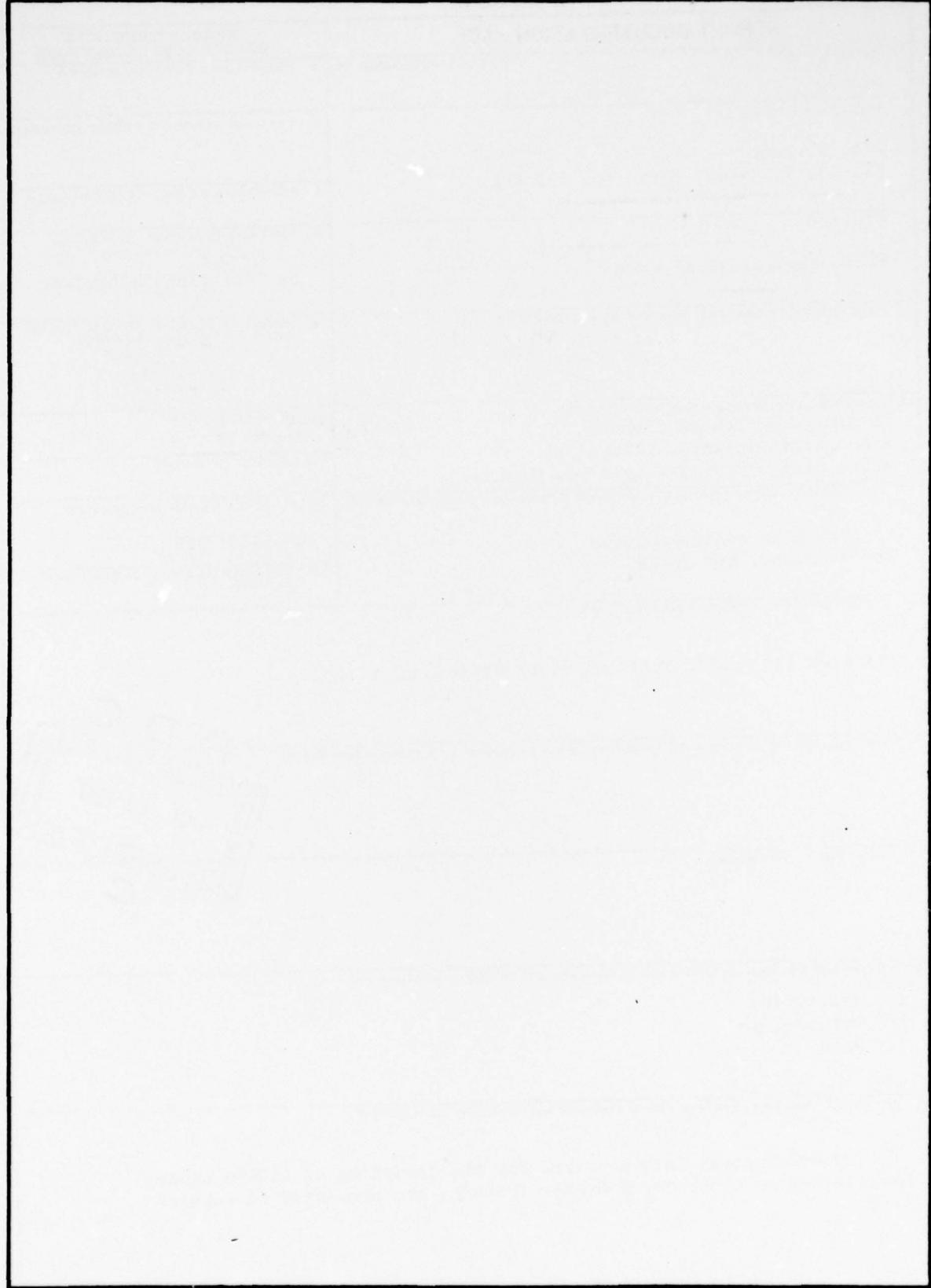
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1. REPORT NUMBER DR-938	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
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18. SUPPLEMENTARY NOTES	19. KEY WORDS (Continue on reverse side if necessary and identify by block number) 1. Ballistics 2. Meteorology 3. Wind	
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of 12817A Lance, Missile Number 4106, Round Number 295 RCL, are presented in tabular form.		

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INTRODUCTION

12817A Lance, Missile Number 4106, Round Number 295 RCL, was launched from RATSCAT, White Sands Missile Range (WSMR), New Mexico, at 0850 HRS MST, 21 April 1977. The scheduled launch time was 0845 HRS MST.

DISCUSSION

Meteorological data were recorded and reduced by the WSMR Meteorological Team, Atmospheric Sciences Laboratory (ASL), WSMR, New Mexico. The data are presented in the following tabulations.

ELEVATION	3964.61	FEET/MSL
PRESSURE	880.2	MBS
TEMPERATURE	8.2	°C
RELATIVE HUMIDITY	66	%
DEW POINT	2.2	°C
DENSITY	1085.0	GM/M ³
WIND SPEED	02	MPH
WIND DIRECTION	125	DEGREES
CLOUD COVER	.1	Sc

TABLE I. SURFACE OBSERVATIONS TAKEN AT RATSCAT,
0841 HRS MST/21 APRIL 1977.

ELEVATION	3964.61	FEET/MSL
PRESSURE	880.2	MBS
TEMPERATURE	10.0	°C
RELATIVE HUMIDITY	63	%
DEW POINT	3.2	°C
DENSITY	1078.0	GM/M ³
WIND SPEED	02	MPH
WIND DIRECTION	129	DEGREES
CLOUD COVER	.1	Sc

TABLE II. SURFACE OBSERVATIONS TAKEN AT RATSCAT,
0847 HRS MST/21 APRIL 1977.

T-TIME (MIN-SEC)	SPEED (MPH)	DIR DEG
-30.0	01	250
-20.0	01	250
-10.0	02	250
-00.00	02	250

TABLE III. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 1
 12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL
 LAUNCHED FROM RATSCAT, 0902 MST/21 APRIL 1977

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	000	00	2100	180	0.5
100	180	01	2200	284	4.0
200	180	02	2300	289	9.5
300	193	02	2400	315	9.5
400	360	0.5	2500	326	3.5
500	008	3.5	2600	328	5.0
600	328	4.5	2700	292	2.5
700	315	6.5	2800	307	2.5
800	291	4.5	2900	305	6.0
900	198	1.5	3000	310	10.5
1000	191	8.0	3100	320	9.0
1100	211	8.0	3200	291	4.5
1200	196	3.5	3300	294	9.0
1300	220	4.0	3400	291	7.5
1400	360	0.5	3500	291	7.5
1500	180	1.0	3600	284	10.5
1600	143	2.5	3700	283	7.0
1700	140	4.0	3800	286	7.0
1800	124	2.0	3900	283	9.0
1900	135	3.0	4000	301	14.0
2000	141	3.0	4100	298	15.0

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA, RELEASE NO. 1
RELEASED FROM RATSCAT, AT 0847 MST/21 APRIL 1977
12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL

PIBAL RELEASE POINT WSTM COORDINATES:

X = 513,312.04 Y = 357,958.56 Z = 3964.61

APPROXIMATELY: 1/4 MILE EAST OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
4200	299	15.5
4300	301	13.5
4400	303	14.0
4500	313	14.0
4600	321	12.0
4700	305	12.0
4800	298	12.5
4900	310	11.0
5000	324	15.5
5100	318	15.5
5200	315	13.0
5300	304	12.5
5400	318	13.5
5500	307	15.0
5600	326	14.5

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
5700	334	16.0
5800	320	15.5
5900	322	14.5
6000	316	16.5
6100	317	12.0
6200	315	14.0
6300	318	14.5
6400	315	15.5
6500	314	15.5
6600	331	14.5
6700	315	17.0
6800	325	13.0
6900	318	14.0
7000	313	13.5

TABLE IV. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	000	00	2100	323	2.5
100	000	00	2200	346	4.0
200	360	0.5	2300	270	2.5
300	018	3.0	2400	270	1.0
400	018	1.5	2500	297	1.0
500	078	2.5	2600	276	4.5
600	055	2.0	2700	287	5.5
700	180	2.0	2800	312	7.5
800	174	5.0	2900	276	5.0
900	169	5.0	3000	261	6.5
1000	202	11.5	3100	260	6.0
1100	204	7.0	3200	261	6.5
1200	198	5.0	3300	270	8.5
1300	149	3.0	3400	286	7.5
1400	174	5.0	3500	287	7.0
1500	130	4.0	3600	296	8.0
1600	173	4.0	3700	279	10.0
1700	180	4.0	3800	294	16.0
1800	173	4.0	3900	315	12.0
1900	211	3.0	4000	300	10.0
2000	233	2.5	4100	324	11.0

TABLE V. PILOT-BALLOON-MEASURED WIND DATA, RELEASE NO. 2
RELEASED FROM RATSCAT, AT 0903 MST/21 APRIL 1977
12817A LANCE, MISSILE NO. 4106, ROUND NO. 295 RCL

PIBAL RELEASE POINT WSTM COORDINATES:

X = 513,312.04 Y = 357,958.56 Z = 3964.61

APPROXIMATELY: 1/4 MILE EAST OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
4200	319	12.0	6600	335	18.0
4300	317	9.5	6700	330	17.3
4400	315	10.5	6800	341	18.0
4500	308	11.0	6900	348	20.0
4600	327	9.0	7000	347	21.0
4700	325	12.0	7100	339	25.0
4800	321	11.0	7200	340	28.5
4900	321	10.5	7300	348	27.5
5000	319	11.5	7400	355	24.5
5100	310	11.5	7500	353	24.0
5200	313	11.0	7600	343	26.0
5300	303	15.0	7700	350	26.5
5400	315	10.5	7800	344	25.5
5500	308	14.0	7900	342	27.0
5600	323	15.5	8000	341	30.0
5700	334	17.5	8100	338	28.0
5800	327	17.5	8200	337	28.0
5900	321	13.5	8300	334	27.5
6000	340	13.0	8400	334	28.0
6100	324	13.5	8500	335	28.5
6200	332	11.5	8600	337	30.5
6300	330	13.0	8700	333	32.0
6400	330	12.0	8800	331	31.5
6500	348	12.0	8900	331	29.0

TABLE V. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)	HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
9000	335	28.5	10300	318	26.0
9100	330	27.5	10400	319	24.5
9200	332	28.0	10500	318	23.5
9300	322	27.0	10600	314	23.5
9400	323	27.0	10700	308	26.5
9500	326	25.5	10800	307	24.0
9600	328	28.0	10900	321	24.0
9700	328	28.0	11000	314	24.0
9800	323	27.0	11100	316	25.0
9900	321	21.0	11200	320	26.5
10000	317	25.5	11300	320	26.0
10100	322	27.5	11400	317	23.5
10200	318	28.5			

TABLE V. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

STATION ALTITUDE 4051.00 FEET MSL
 21 APR. 77 0840 HRS MST
 ASCENSION NO. 160

SIGNIFICANT LEVEL DATA
 11003016.
 JALLEN

TABLE VI.

WSTM SITE COORDINATES
 450491.60 FEET E
 464023.05 FEET N

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL.HUM. PERCENT	
			DEGREES	CENTIGRADE
881.5	4051.0	11.3	3.1	57.7
850.0	5043.7	8.2	-2.7	46.0
798.4	6737.5	6.9	-9.3	31.0
700.0	10227.1	-2.4	-9.7	57.0
669.6	11381.2	-4.5	-10.3	64.0
589.2	14651.0	-11.2	-18.2	56.0
572.4	15380.5	-11.6	-22.7	39.0
500.0	18734.4	-19.7	-31.5	34.0
422.8	22747.1	-29.8	-44.6	22.0
400.0	24036.6	-33.6	-47.1	24.0
377.6	25356.6	-37.3	-49.3	27.0
346.6	27282.5	-42.4		
300.0	30454.0	-48.1		
287.4	31382.2	-49.4		
266.4	33006.7	-52.8		
250.0	34351.3	-54.6		
230.8	36026.0	-57.1		
207.8	38213.7	-57.1		
200.0	39013.2	-56.0		
188.6	40238.4	-57.6		
181.6	41026.0	-57.1		
161.8	43434.2	-56.9		
150.0	45022.2	-54.9		
133.4	47481.5	-57.0		
127.4	48445.7	-55.4		
119.5	49788.2	-56.6		
106.2	52258.4	-56.2		
100.0	53515.1	-57.6		
92.2	55210.4	-56.6		
70.0	60944.4	-58.9		

STATION ALTITUDE 4051.00 FEET MSL
21 APR. 77 0840 HRS MST
ASCENSION NO. 160

SIGNIFICANT LEVEL DATA
1110030160
JALLEN

WSTM SITE COORDINATES
450491.60 FEET E
464023.05 FEET N

TABLE VI. (CONT)

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE DEGREES CENTIGRADE	AIR DEMPPOINT DEGREES	REL.HUM. PERCENT
65.0	62477.6	-59.4		
61.4	63663.2	-56.6		
50.0	67941.0	-59.0		
42.0	71176.9	-57.1		
30.0	78653.6	-54.4		
20.0	87318.7	-50.6		

STATION ALTITUDE 4051.00 FEET MSL
 21 APR. 77 0840 HRS MST
 ASCENSION NO. 140

UPPFR AIR DATA
 111003n16
 IALLEN

TABLE VII.

GEOMETRIC PRESSURE TEMPERATURE AIR DEWPNT
 ALTITUDE MILLIBARS DEGREES CENTIGRADE

			REL.HUM. PERCENT	SPEED OF SOUND MFTER KNOTS	WIND DATA DIRECTION DEGREES(TN)	INDEX OF REFRACTION
4751.0	981.5	11.3	3.1	57.0	107.4	1.000276
4500.0	867.1	9.9	.5	52.0	1064.3	1.000267
5000.0	851.4	8.3	-2.4	46.5	1051.3	1.000259
5500.0	835.8	7.8	-4.3	42.0	1034.1	1.000252
6000.0	820.5	7.5	-6.1	37.5	1016.7	1.000245
6500.0	805.4	7.1	-8.0	33.1	999.7	1.000239
7000.0	790.5	6.2	-8.9	33.0	984.4	1.000234
7500.0	775.8	4.9	-9.7	36.7	970.6	5.3
8000.0	761.3	3.5	-8.6	40.4	957.0	6.7
8500.0	747.1	2.2	-8.7	44.1	943.7	6.7
9000.0	733.1	.9	-8.9	47.9	930.6	5.3
9500.0	719.4	-.5	-9.2	51.6	917.6	1.000232
10000.0	706.0	-.2	-1.8	55.3	904.9	1.000229
10500.0	692.7	-.7	-2.9	58.7	891.5	1.000226
11000.0	679.5	-3.8	-10.1	61.7	877.5	1.000223
11500.0	666.5	-4.7	-10.5	63.7	863.7	1.000220
12000.0	653.6	-5.8	-11.8	62.5	850.3	1.000217
12500.0	640.9	-6.8	-13.0	61.3	837.1	1.000214
13000.0	628.5	-7.8	-14.2	60.0	824.2	1.000210
13500.0	616.3	-8.8	-15.4	58.8	811.4	1.000207
14000.0	604.4	-9.9	-16.6	57.6	798.9	1.000203
14500.0	592.7	-10.9	-17.8	56.4	786.5	1.000198
15000.0	581.1	-11.4	-18.2	47.9	772.8	1.000195
15500.0	569.6	-11.9	-23.0	38.8	759.1	1.000191
16000.0	558.3	-13.1	-24.3	38.1	747.4	1.000187
16500.0	547.1	-14.3	-25.7	37.3	736.9	1.000183
17000.0	536.2	-15.5	-27.0	36.6	724.7	1.000179
17500.0	525.5	-16.7	-28.3	35.8	713.6	1.000174
18000.0	515.0	-17.9	-29.6	35.1	702.7	1.000171
18500.0	504.7	-19.1	-30.9	34.3	692.0	1.000168

STATION ALTITUDE 4051.00 FEET MSL
 21 APR. 77 0840 HRS MST
 ASCENSION NO. 160

UPPER AIR DATA
 11003160
 JALLEN

TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	REL.HUM. PERCENT	SPEED OF WIND DATA DEGREES(TN)	INDEX OF REFRACTION		
					WSTM SITE COORDINATES 450491.60 FEET E 464023.05 FEET N	WSTM SITE COORDINATES 450491.60 FEET E 464023.05 FEET N	WSTM SITE COORDINATES 450491.60 FEET E 464023.05 FEET N
64000.0	60.4	-56.8	97.3	228.2	9.9	1.000022	
64500.0	59.0	-57.1	95.1	572.7	8.1	1.000021	
65000.0	57.6	-57.3	93.0	572.3	6.8	1.000021	
65500.0	56.2	-57.6	90.9	571.9	5.0	1.000020	
66000.0	54.9	-57.9	88.8	571.6	4.6	1.000020	
66500.0	53.6	-58.2	86.8	571.7	3.9	1.000019	
67000.0	52.3	-58.5	84.9	570.8	2.6	1.000019	
67500.0	51.1	-58.8	83.0	570.4	2.0	1.000018	
68000.0	49.9	-59.0	81.1	570.2	2.6	1.000018	
68500.0	48.7	-58.7	79.1	570.5	5.9	1.000018	
69000.0	47.5	-58.4	77.1	570.9	7.3	1.000017	
69500.0	46.4	-58.1	75.1	571.3	6.5	1.000017	
70000.0	45.3	-57.8	73.3	571.7	5.8	1.000016	
70500.0	44.2	-57.5	71.4	572.1	4.3	1.000016	
71000.0	43.2	-57.2	69.6	572.5	3.4	1.000015	
71500.0	42.1	-57.0	67.9	572.8	3.9	1.000015	
72000.0	41.2	-56.8	66.3	573.0	4.8	1.000015	
72500.0	40.2	-56.6	64.7	573.3	5.9	1.000014	
73000.0	39.2	-56.4	63.1	573.5	6.0	1.000014	
73500.0	38.3	-56.3	61.4	573.7	5.7	1.000014	
74000.0	37.4	-56.1	60.1	574.0	5.3	1.000013	
74500.0	36.5	-55.9	58.6	574.2	6.3	1.000013	
75000.0	35.7	-55.7	57.2	574.5	40.9	7.3	1.000013
75500.0	34.9	-55.5	55.8	574.7	42.8	7.6	1.000012
76000.0	34.1	-55.4	54.4	574.9	49.0	6.8	1.000012
76500.0	33.2	-55.2	53.1	575.2	56.7	6.1	1.000012
77000.0	32.5	-55.0	51.8	575.4	67.8	4.5	1.000012
77500.0	31.7	-54.8	50.6	575.6	92.4	2.9	1.000011
78000.0	30.9	-54.6	49.3	575.9	137.6	2.6	1.000011
78500.0	30.2	-54.5	48.1	576.1	160.9	3.4	1.000011

STATION ALTITUDE 4051.00 FEET MSL
 21 APR. 77 0849 HRS MST
 ASCENSION NO. 160

UPPER AIR DATA
 111003016C
 JALLEN
 0849 HRS MST
 ASCENSION NO. 160

TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	RFL.HUM. PFRCENT		SPEED OF WIND KNOTS	WIND DATA DIRECTION DEGREES(TIN)	SPEED KNOTS	INDEX OF REFRACTION
			GM/CUBIC	SOUND METER				
79000.0	29.5	-54.2	47.0	576.4	173.9	4.6	1.00001	
79500.0	28.8	-54.0	45.8	576.7	181.4	5.4	1.000010	
80000.0	28.2	-53.8	44.7	577.0	188.1	5.2	1.000010	
80500.0	27.5	-53.6	43.7	577.3	195.1	5.1	1.000010	
81000.0	26.9	-53.4	42.6	577.5	210.3	4.9	1.000009	
81500.0	26.3	-53.2	41.6	577.8	233.7	5.1	1.000009	
82000.0	25.7	-52.9	40.6	578.1	252.3	6.1	1.000009	
82500.0	25.1	-52.7	39.6	578.4	278.1	12.5	1.000009	
83000.0	24.5	-52.5	38.6	578.7	287.0	22.0	1.000009	
83500.0	23.9	-52.3	37.7	579.0	290.4	31.7	1.000008	
84000.0	23.4	-52.1	36.8	579.3	293.3	26.9	1.000008	
84500.0	22.8	-51.8	35.9	579.6	297.8	20.7	1.000008	
85000.0	22.3	-51.6	35.1	579.8			1.000008	
85500.0	21.8	-51.4	34.2	580.1			1.000008	
86000.0	21.3	-51.2	33.4	580.4			1.000007	
86500.0	20.8	-51.0	32.6	580.7			1.000007	
87000.0	20.3	-50.7	31.8	581.0			1.000007	

STATION ALTITUDE 4051.00 FEET MSL
 21 APR. 77 0840 HRS MST
 ASCENSION NO. 16C

UPPER AIR DATA
 111003016C
 JALLEN

TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREEES CENTIGRADE	RFL.HUM. PERCENT	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN) KNOTS	INDEX OF REFRACTION
	MILLIBARS	AIR DEGREEES CENTIGRADE	GM/CUBIC METER	KNOTS		
49000.0	124.1	-55.9	199.8	574.2	230.2	1.000044
49500.0	121.2	-56.3	194.7	573.6	234.7	1.000043
50000.0	119.3	-56.6	190.3	573.3	240.2	1.000042
50500.0	115.5	-56.5	185.7	573.4	242.9	1.000041
51000.0	112.8	-56.4	181.3	573.6	243.8	1.000040
51500.0	110.1	-56.3	174.9	573.7	243.9	1.000039
52000.0	107.5	-56.2	172.7	573.6	234.7	17.5
52500.0	105.0	-56.5	168.8	573.5	224.8	17.1
53000.0	102.5	-57.0	165.2	572.7	216.2	17.0
53500.0	100.1	-57.6	161.7	572.0	209.0	17.2
54000.0	97.7	-57.3	157.7	572.3	202.0	17.6
54500.0	95.4	-57.0	153.8	572.7	201.7	17.3
55010.0	93.1	-56.7	149.9	573.1	201.6	17.0
55500.0	90.9	-56.7	146.4	573.1	202.4	16.6
56000.0	88.8	-56.9	143.0	572.9	204.4	16.2
56500.0	86.7	-57.1	139.7	572.6	206.6	15.8
57000.0	84.6	-57.3	136.6	572.3	208.0	17.2
57500.0	82.6	-57.5	133.4	572.1	209.1	18.7
58000.0	80.6	-57.7	130.4	571.8	211.3	21.6
58500.0	78.7	-57.9	127.4	571.5	213.7	25.5
59000.0	76.9	-58.1	124.5	571.3	216.0	28.2
59500.0	75.0	-58.3	121.7	571.0	220.4	26.1
60000.0	73.2	-58.5	118.9	570.7	225.6	24.3
60500.0	71.5	-58.7	116.2	570.5	231.1	22.1
61000.0	69.6	-58.9	113.5	570.2	237.8	20.0
61500.0	68.1	-59.1	110.9	570.0	242.3	19.2
62000.0	66.5	-59.2	108.3	569.8	243.5	19.5
62500.0	64.9	-59.3	105.8	569.6	244.4	19.6
63000.0	63.4	-58.2	102.7	571.2	241.5	16.1
63500.0	61.9	-57.0	99.7	572.6	236.9	12.6

STATION ALTITUDE 4251.00 FEET MSL
 21 APR. 77 0840 HRS MST
 ASCENSION NO. 163

UPPER AIR DATA
 111003016
 JALLEN
 TABLE VII. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPOINT DEGREES CENTIGRADE	RFL.HUM.	DENSITY PERCENT	SPEED OF SOUND METER KNOTS	WIND DATA	INDEX OF REFRACTION
				G/CUBIC METER	CM/CUBIC METER	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS
19000.0	494.3	-720.4	-372.1	33.7	621.2	679.5	322.7	31.2
19500.0	484.3	-21.6	-33.9	31.7	670.5	617.9	325.1	30.9
20000.0	474.2	-22.9	-35.5	30.2	660.0	616.4	329.0	30.1
20500.0	464.4	-24.1	-37.1	28.7	649.6	614.8	329.2	29.3
21000.0	454.4	-25.4	-38.8	27.2	639.4	613.2	330.1	28.5
21500.0	445.4	-26.7	-40.4	25.7	629.4	611.7	330.3	28.3
22000.0	436.2	-27.9	-42.1	24.2	619.6	610.1	330.3	28.3
22500.0	427.2	-29.2	-43.7	22.7	609.9	608.5	331.7	27.8
23000.0	418.2	-30.5	-45.1	22.4	600.5	606.8	333.4	27.4
23500.0	409.2	-32.0	-46.1	23.2	591.3	605.0	333.5	27.6
24000.0	400.5	-33.5	-47.0	23.9	582.3	603.1	333.5	27.9
24500.0	392.1	-34.9	-47.9	25.1	573.1	601.4	333.4	27.9
25000.0	383.5	-36.3	-48.7	26.2	564.1	599.6	333.4	27.9
25500.0	375.2	-37.7	-50.1	25.0	555.1	597.8	331.5	28.6
26000.0	366.9	-39.0	-51.2	1A.0	545.9	596.1	329.4	29.3
26500.0	358.9	-40.3	-59.2	11.0	537.0	594.4	328.8	30.5
27000.0	351.0	-41.7	-67.0	4.0	528.2	592.7	328.4	31.7
27500.0	343.2	-42.8			519.0	591.3	329.3	32.7
28000.0	335.5	-43.7			509.3	590.1	330.5	33.6
28500.0	327.9	-44.6			499.8	5a9.0	331.0	35.3
29000.0	320.5	-45.5			490.5	5a7.8	331.2	37.4
29500.0	313.3	-46.4			481.3	5a6.7	331.3	39.6
30000.0	306.3	-47.3			472.4	5a5.5	331.3	41.8
30500.0	299.4	-48.2			463.5	5a4.3	331.0	44.5
31000.0	292.5	-49.9			454.4	5a3.4	330.1	48.1
31500.0	285.8	-49.6			445.5	5a2.4	329.4	51.5
32000.0	279.7	-50.7			437.3	5a1.1	329.0	54.7
32500.0	272.6	-51.7			429.2	579.7	328.7	57.0
33000.0	266.5	-52.8			421.3	578.3	328.5	53.9
33500.0	260.3	-53.5			412.7	577.4	328.3	50.8

•• AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4051.00 FT MSL
 21 APR. 77 0849 HRS MST
 ASCENSION NO. 163

UPPER AIR DATA
 11003016
 JALLEN
 TABLE VII. (CONT)

NSTM SITE COORDINATES
 450491.60 FEET E
 464023.05 FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	REFL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN) SPEED KNOTS	INDEX OF REFRACTION
34000.0	254.2	-54.1	434.3	575.0	327.9	47.6	1.70709
34500.0	244.2	-54.8	396.1	575.6	327.4	44.4	1.000088
35000.0	242.4	-55.6	388.1	574.7	326.5	45.0	1.000086
35500.0	236.7	-56.3	380.2	573.7	325.6	46.2	1.000085
36000.0	231.1	-57.1	372.5	572.7	323.5	47.3	1.000083
36500.0	225.5	-57.1	363.8	572.6	321.2	48.4	1.000081
37000.0	220.3	-57.1	355.2	572.6	319.5	46.7	1.000079
37500.0	215.0	-57.1	346.7	572.6	318.0	43.4	1.000077
38000.0	209.9	-57.1	339.5	572.6	315.8	39.0	1.000075
38500.0	205.1	-56.7	329.9	573.1	312.3	33.1	1.000073
39000.0	200.1	-56.0	321.1	574.1	306.9	28.7	1.000072
39500.0	195.4	-56.6	314.4	573.2	29.1	27.8	1.000070
40000.0	190.8	-57.3	307.9	572.4	29.0	27.4	1.000069
40500.0	186.2	-57.4	300.6	572.2	283.0	27.0	1.000067
41000.0	181.8	-57.1	293.2	572.6	275.0	27.1	1.000065
41500.0	177.5	-57.1	284.2	572.7	269.5	27.6	1.000064
42000.0	173.3	-57.0	279.4	572.7	264.5	28.3	1.000062
42500.0	169.2	-57.0	272.7	572.8	261.6	30.5	1.000061
43000.0	165.2	-56.9	266.2	572.8	260.1	33.6	1.000059
43500.0	161.3	-56.8	259.7	573.0	260.1	35.9	1.000058
44000.0	157.5	-56.2	252.9	573.8	262.5	36.9	1.000056
44500.0	153.8	-55.6	244.2	574.7	37.5	1.000055	
45000.0	150.2	-54.9	239.7	575.5	264.6	33.9	1.000053
45500.0	146.6	-55.3	234.5	575.0	264.1	30.2	1.000052
46000.0	143.2	-55.7	229.4	574.4	257.3	27.0	1.000051
46500.0	139.8	-56.2	224.4	573.9	247.2	24.4	1.000050
47000.0	136.5	-56.6	219.6	573.3	239.6	22.9	1.000049
47500.0	133.3	-57.0	214.8	572.8	235.9	21.9	1.000048
48000.0	130.1	-56.1	208.9	573.9	232.5	21.0	1.000047
48500.0	127.1	-55.4	203.3	574.8	231.4	20.2	1.000045

STATION ALTITUDE 4051.00 FEET MSL
 21 APR. 77 0843 HRS MST
 ASCENSION NO. 160

MANDATORY LEVELS
 11003n16
 JALLEN

TABLE VIII.

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	ATR DEGREES	TEMPERATURE CENTIGRAD	WIND DATA		
				DENPOINT PERCENT	DIRECTION DEGREES(1TN)	SPEED KNOTS
850.0	5942.	0.2	-2.7	46.	31.1	.6
900.0	6681.	6.9	-8.9	31.	279.1	4.1
750.0	8457.	2.5	-8.7	63.	321.9	9.6
700.0	16221.	-2.4	-9.7	57.	348.3	17.2
650.0	12139.	-6.1	-12.1	42.	333.1	22.2
600.0	14180.	-10.2	-17.1	17.	324.3	22.5
550.0	16366.	-14.3	-25.3	18.	321.0	24.7
500.0	19715.	-19.7	-31.5	14.	322.2	30.5
450.0	21250.	-26.0	-39.6	26.	330.3	28.3
400.0	24066.	-33.6	-47.1	24.	333.5	27.9
350.0	27026.	-41.8	-69.7	23.000	328.3	31.9
300.0	31415.	-48.1			331.1	44.7
250.0	34289.	-54.6			327.6	45.4
200.0	38934.	-56.0			306.8	28.7
175.0	41707.	-57.7			266.6	28.0
150.0	44917.	-54.9			264.4	33.8
125.0	48723.	-55.8			230.6	19.6
100.0	53369.	-57.6			208.9	17.2
80.0	58060.	-57.8			212.2	22.8
70.0	60757.	-58.9			236.8	20.3
60.0	63939.	-56.9			224.9	9.4
50.0	67709.	-59.0			328.4	2.4
40.0	72332.	-56.6			40.6	6.1
30.0	78347.	-54.4			165.4	3.7
25.0	92195.	-52.7			278.7	12.9
20.0	86495.	-50.6				

•• AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4126.59 FEET MSL
 21 APR. 77 0850 HRS MST
 ASCENSION NO. 277

SIGNIFICANT LEVEL DATA
 11100.0277
 HOLLOWAY
 TABLE IX.

WSTM SITE COORDINATES
 571739.24 FEET E
 362745.21 FEET N

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE DEGREES CENIGRADI	AIR DEWPOINT DEGREES CENIGRADI	REL.HUM. PERCENT
680.1	4126.6	12.2	1.8	49.0
869.7	4452.1	9.4	-1.6	46.0
850.0	5074.9	8.3	-2.0	43.0
819.8	6055.2	7.7	-4.7	41.0
710.1	9885.0	7.6	-10.8	46.0
700.0	10260.4	7.8	-10.6	51.0
677.8	11099.2	4.3	-10.9	60.0
666.8	11522.1	5.6	-14.1	65.0
618.8	13437.5	8.5	-18.5	44.0
566.3	15680.5	12.5	-23.0	41.0
532.3	17225.8	15.6	-29.5	29.0
500.0	18767.9	19.2	-31.0	34.0
400.0	24071.4	33.6	-45.1	30.0
368.3	25956.2	38.9	-49.8	30.0
311.8	29645.9	47.6		
300.0	30481.8	49.2		
286.3	31336.5	51.4		
271.3	32633.3	52.3		
250.0	34365.9	54.5		
210.8	37928.7	58.6		
200.0	39023.9	56.0		
176.3	41666.6	56.0		
160.3	43648.6	58.6		
153.3	44579.8	55.6		
150.0	45036.4	56.0		
135.3	47191.8	57.4		
112.3	51090.6	55.5		
100.0	53512.2	58.6		
91.8	55282.9	59.3		
89.3	55854.8	58.3		

STATION ALTITUDE 4126.39 FEET MSL
21 APR. 77 0850 HRS MST
ASCENSION NO. 277

SIGNIFICANT LEVEL DATA
HOLLOWAY

TABLE IX. (CONT)

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL.HUM. PERCENT
		AIR DEWPOINT DEGREES CENIGRADE		
80.3	58047.3	-60.9		
74.3	59645.1	-59.7		

"STM SITE COORDINATES
571739.24 FEET E
362745.21 FEET N

STATION ALTITUDE 4,260.59 FEET MSL
 21 APR. 77 0850 HRS MST
 ASCENS. ON NO. 277

UPPER AIR DATA
 11100-027/
 HOLLOWAY

TABLE X.

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR DEGREES CENTIGRADE	TEMPERATURE DEGREE C	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	INDEX OF REFRACTION
4126.6	880.1	42.2	1.8	49.0	1071.2	654.1	*U	1.000271
4800.0	856.6	3.8	-1.9	47.1	1056.5	654.9	252.0	1.000261
5500.0	832.7	3.0	-3.4	44.3	1039.9	553.7	252.0	1.000252
6400.0	809.3	7.0	-5.2	41.5	1004.5	552.0	202.6	1.000244
7200.0	785.3	5.2	-6.5	42.5	981.0	550.0	299.0	1.000237
8000.0	762.1	3.5	-7.7	43.5	956.1	548.5	299.0	1.000230
8800.0	739.6	1.8	-9.0	44.6	932.8	546.4	301.4	1.000224
9600.0	717.7	0.0	-10.3	45.6	914.0	544.4	311.3	1.000218
10400.0	696.3	-2.2	-10.6	52.5	891.9	541.7	316.0	1.000213
11200.0	675.2	-4.6	-10.9	61.2	874.6	538.9	328.0	17.8
12000.0	654.5	-0.3	-12.6	59.8	852.4	536.8	337.0	20.2
12800.0	634.4	-7.5	-15.9	51.0	834.1	535.3	332.2	20.3
13600.0	614.8	-8.8	-18.9	43.8	804.5	533.7	323.1	20.1
14400.0	595.7	-10.2	-20.4	42.7	786.7	531.9	320.0	21.0
15200.0	577.2	-11.6	-22.0	41.6	766.5	530.4	321.1	23.5
16000.0	559.1	-13.1	-24.3	38.5	746.7	528.4	321.2	26.7
16800.0	541.5	-14.7	-27.9	32.3	729.6	526.4	320.5	29.2
17600.0	524.3	-10.5	-29.9	30.2	711.3	524.3	319.3	29.9
18400.0	507.5	-18.3	-30.6	32.8	693.6	522.0	319.6	32.2
19200.0	491.0	-20.4	-32.2	33.7	676.5	519.5	319.9	30.4
20000.0	474.7	-22.5	-34.3	33.1	659.8	516.8	320.4	30.0
20800.0	459.0	-24.7	-36.4	32.5	642.5	514.1	323.3	28.3
21600.0	443.8	-26.9	-38.6	31.9	627.7	511.4	329.3	25.9
22400.0	429.1	-29.1	-40.7	31.3	614.4	508.7	334.4	25.2
23200.0	414.9	-31.2	-42.8	30.7	597.4	506.0	338.5	26.0
24000.0	401.2	-33.4	-44.9	30.1	582.9	503.4	341.3	26.3
24800.0	387.4	-35.6	-46.9	30.0	560.2	500.4	337.9	28.2
25600.0	374.1	-37.9	-48.9	30.0	550.9	497.0	335.4	29.8
26400.0	361.0	-39.9	-51.8	26.4**	539.2	394.9	333.9	30.9
27200.0	348.2	-41.8	-55.8	19.9**	524.4	592.5	332.0	31.5

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4126.39 FEET MSL
 21 APR. 77 0850 HRS MST
 ASCENSION NO. 277

UPPER AIR DATA
 111001027/
 HOLLOWAY

TABLE X. (CONT.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPOINT DEGREES	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPD OF WIND KNOTS	WIND DATA		INDEX OF REFRACTION
							DIRECTION DEGREES (TN)	SPEED KNOTS	
28000.0	3355.8	-43.7	-60.5	13.4**	505.9	327.6	32.1	1.000114	
28800.0	3255.9	-45.6	-66.9	6.9**	495.9	323.7	32.9	1.000111	
29600.0	312.4	-47.5	-66.5	.4**	482.3	325.2	32.0	1.000117	
30400.0	301.1	-49.0			460.1	323.2	319.3	44.0	
31200.0	290.1	-51.0			455.1	380.0	321.4	49.4	
32000.0	279.5	-51.9			440.0	379.3	324.2	53.4	
32800.0	269.2	-52.5			425.0	378.7	326.6	50.4	
33600.0	259.2	-53.5			414.1	377.3	328.4	54.5	
34400.0	249.6	-54.5			397.7	376.6	327.9	51.0	
35200.0	240.2	-55.5			384.4	374.8	324.4	50.0	
36000.0	231.2	-56.4			371.5	373.6	328.2	50.1	
36800.0	222.5	-57.3			359.1	372.4	319.8	40.5	
37600.0	214.1	-58.2			347.1	371.1	302.3	37.5	
38400.0	206.1	-57.5			336.9	371.1	291.9	44.3	
39200.0	198.3	-56.0			316.4	374.1	300.7	51.0	
40000.0	190.9	-56.0			308.2	374.1	285.4	34.4	
40800.0	183.7	-56.0			294.8	374.1	257.0	28.0	
41600.0	176.9	-56.0			285.7	374.1	244.4	35.3	
42400.0	170.2	-57.0			274.3	372.8	272.1	47.8	
43200.0	163.8	-58.0			265.2	371.4	279.5	57.0	
44000.0	157.6	-57.5			254.6	372.1	260.4	54.5	
44800.0	151.7	-55.8			243.1	374.4	271.0	35.4	
45600.0	146.0	-56.4			234.6	375.6	242.6	47.8	
46400.0	140.5	-56.9			226.4	372.9	191.9	30.6	
47200.0	135.2	-57.4			216.4	372.4	201.1	31.8	
48000.0	130.2	-57.0			203.8	372.8	225.6	27.0	
48800.0	125.3	-56.6			201.6	373.3	246.2	26.6	
49600.0	120.6	-56.2			192.7	373.6	237.8	26.5	
50400.0	116.1	-55.8			180.1	374.3	276.4	25.7	
51200.0	111.7	-55.6			170.9	374.6	306.1	27.6	

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4126.59 FEET MSL
 21 APR. 77 0850 HRS MST
 ASCENSION NO. 277

UPPER AIR UTAH
 1110010277
 HOLLOWAY

TABLE X. (CONT)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN) KNOTS	INDEX OF REFRACTION
52000.0	107.5	-56.7	175.0	573.2	204.1	5.0	1.000039
52800.0	103.5	-57.7	167.3	371.8			1.000037
53000.0	99.6	-59.6	161.7				1.000036
54400.0	95.8	-59.0	152.8	370.2			1.000035
55200.0	92.2	-59.3	150.1	369.7			1.000033
56000.0	88.7	-58.5	142.9	370.6			1.000032
56800.0	85.3	-59.4	139.0	369.5			1.000031
57600.0	82.1	-60.4	134.3	368.3			1.000030
58400.0	78.9	-60.6	127.4	367.9			1.000029
59200.0	75.9	-60.0	124.1	366.7			1.000028

STATION ALTITUDE 4126.59 FEET MSL
 21 APR. 77 0850 HRS MST
 ASCESSION NO. 277

MANDATORY LEVELS
 111001027/
 HOLLOWAY
 TABLE XI.

WSTM SITE COORDINATES
 571739.44 FEET E
 362745.21 FEET N

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE DEGREES	AIR DEWPOINT CENTIGRADE	WIND DATA		
				REL.HUM. PERCENT	DIRECTION DEGREES(TN)	SPEED KNOTS
650.0	5073.	8.3	-2.0	48.	252.0	2.3
600.0	6712.	6.3	-5.7	42.	296.7	5.5
750.0	8437.	2.6	-8.4	44.	300.0	1.4
700.0	10254.	-1.8	-10.0	51.	317.0	13.8
650.0	12170.	-6.6	-13.5	58.	350.5	20.8
600.0	14210.	-9.9	-20.1	43.	319.6	20.7
550.0	16396.	-14.0	-25.9	35.	320.9	26.2
500.0	18748.	-19.2	-31.2	34.	319.9	30.3
450.0	21285.	-26.0	-37.7	32.	327.3	26.5
400.0	24040.	-33.6	-45.4	30.	341.5	26.4
350.0	27061.	-41.6	-55.4	21.*	332.6	31.5
300.0	30433.	-49.2		319.5	44.6	
250.0	34504.	-54.5		328.1	51.1	
200.0	38945.	-56.0		296.9	49.4	
175.0	41731.	-56.2		253.9	36.2	
150.0	44932.	-56.0		266.2	27.6	
125.0	48722.	-56.6		246.7	26.5	
100.0	53367.	-58.6				
80.0	57953.	-60.8				

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.